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April 7, 2015

Mr. Steven Way
On-Scene Coordinator
United States Environmental Protection Agency, Region 8
Mail Code: 8EPR-ER
1595 Wynkoop Street
Denver, CO 80202

Re: Oil Analysis for Blacktail Creek Spill – Trip Report
Williston, Williams County, North Dakota
TDD: 0002/1502-01
DCN: W0210.1A.00406
WO#: 20408.012.002.0210.00

Dear Mr. Way:

The United States Environmental Protection Agency (U.S. EPA) tasked the Weston Solutions, Inc., (WESTON®) Superfund Technical Assessment and Response Team (START) under Technical Direction Document (TDD) 0002/1502-01 to support U.S. EPA emergency response at the Blacktail Creek Spill site (Site) in Williston, Williams County, North Dakota. The emergency response was initiated by a report to U.S. EPA from the National Response Center (NRC, Incident #1106269) and was conducted to assess the threat to human health and the environment due to a produced water and crude oil spill into Blacktail Creek (the Site) (Figure 1, Attachment A). **Attachment A** provides figures for this report. **Attachment B** provides a photograph of where the oil sample was collected by the USCG. **Attachment C** provides the START analytical data. **Attachment D** provides analytical data and a sample location map provided by the North Dakota Department of Health (NDDOH). **Attachment E** provides a description of the RPs analytical results.

SITE DESCRIPTION

The Site is located approximately 17 miles north of Williston, Williams County, North Dakota (8.3872474 N and 103.6560305 W) (Attachment A, Figures 1 and 2). The site was referred to EPA by the NRC on January 23, 2015 following a pipeline break which reportedly caused a spill of approximately 70,000 barrels (bbls) of produced water and condensate on January 6, 2015. The pipeline is operated by Summit Midstream Partners, LLC. The spill affected the Black Tail Creek, which is a tributary of the Little Muddy Creek (approximately 4.5 river miles downstream) and ultimately, the Missouri River (approximately 32.5 river miles downstream) (Figure 2).



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SCOPE OF WORK

START was tasked to perform fingerprint analysis on a sample of oil related to the brine release north of Williston, Williams County, North Dakota, including the following scope of work as part of the Emergency Response.

- Provide shipping and analytical services for one oil sample collected by the U.S. Coast Guard.
- Post Oil Fingerprint analysis on EPAOSC.net as a private document.
- Manage Data in accordance with EPA R8 Response Unit's Best Management Practices.
- Determine the usability of data by comparing it to EPA R8 Geospatial Data Standards.

ACTIVITIES

START received direction from OSC Steven Way to provide the U.S. Coast Guard (USCG) with dangerous goods shipping procedures and laboratory services on January 27, 2015. The USCG representatives at the Site, who were assisting USEPA reported collecting a single sample of oil from the skimmer basin located at the Station #1 oil collection site (48.401306 N, 103.637461 W) as seen in Attachment B. START initiated dangerous goods shipping procedures and laboratory services through SGS Laboratories in Williston, ND on January 28, 2015. SGS Laboratories shipped the sample from Williston, ND to their facility in St. Rose, LA for a simulated distillation analysis (fingerprinting).

The laboratory utilized ASTM Method D7169 for analysis of the sample. START requested an Electronic Data Deliverable (EDD) and a standard environmental laboratory QC data package for the results (Level IV), however, the laboratory does not provide either one for this type of work. START did request and receive QC data for method requirements specified in ASTM D7169. START received results from the simulated distillation on February 2, 2015 (Attachment C) and posted them on epaosc.org, as a "private" post, on 2/11/2015.

START collected two produced water samples for analysis of VOCs, DRO, GRO, and Oil and Grease during the initial response. Both of the samples had hits for Benzene and Toluene, with Benzene being above both the EPA MCL and the North Dakota Class I and II Human Health Value (HHV) in both samples. DRO, GRO and Oil and Grease were detected in both produced water samples collected. Results are provided in the Final EPA Water Sampling Results table in Attachment C.

Summit Midstream contractor Stantec conducted groundwater, surface water and produced water sampling during the period of January 14 through February 11, 2015. START compiled surface water and groundwater detections for the following analyses: volatile organic compounds (VOCs) by SW8260B, semivolatile organic compounds (SVOCs) by SW8270, metals by SW6010/SW6020 and drinking water methods E200.7/E200.8 and total petroleum hydrocarbons (TPH) by SW8015. See Attachment E for a brief description and analytical tables.

START managed data in accordance with EPA R8 Response Unit's Best Management Practices. Deviations from the SAP include:

- A level IV data package could not be provided to START by SGS Laboratories; however START did receive the results of a reference sample and QC steps per ASTM method D7169.



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- A Scribe EDD could not be provided to START by SGS Laboratories for ASTM method D7169. Per US EPA, the data from ASTM method D7169 was not entered into Scribe

CHARACTERIZATION ANALYSIS

Three oil samples were collected from a suspected spill of produced water and crude oil at the Blacktail Creek site, two by the State of North Dakota and one by the USCG. The samples collected by the ND DOH were collected from a surface ice scrape and the shavings from 0' - 1" below the surface of the ice. See Attachment D for a chromatogram and the location of the ice scrape samples provided by the ND DOH. The sample collected by the USCG was collected the basin of the rope skimmer and was submitted for a fingerprinting/characterization analyses at SGS labs in Saint Rose, LA. Chromatograms were produced using GC/MS and GC/PID, and High-Temperature Simulated Distillation (HT SIMDIS) analyses were also performed.

The GC/MS chromatograms reveal a hydrocarbon range of C10-C35) with the bulk of mass in the C10-C35 range; the boiling point distillation (HT SIMDIS) tests hint at smaller amounts of heavy hydrocarbons up to C64 ,giving us a total range of C10-C64. The lighter hydrocarbons found in produced water, such as C2-C10, evaporate quickly on exposure to atmosphere. The hydrocarbon range seen in the samples recovered from the spill (C10-C64) is consistent with unrefined product; refined products have a smaller range, for instance diesel fuel is C12-C20. These sample results, and more specifically this hydrocarbon range (C10-C64), is therefore consistent with what we would expect from hydrocarbons found in produced water (from oil wells) that had been allowed to weather by atmospheric exposure.

If there are any questions or comments regarding this report, please do not hesitate to contact me at eric.sandusky@westonsolutions.com or (303) 729-6132.

Sincerely,

WESTON SOLUTIONS, INC.

A handwritten signature in black ink, appearing to read "Eric Sandusky", is written over the printed name.

Eric Sandusky
Project Team Lead



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Attachment:

A – Figures

B – Photographs of Sample Location

C – START Laboratory Analytical Data

D – NDDOH Laboratory Analytical Data and Sample Location Map

E – Description of RPs Analytical Data

cc: Dave Robinson, Project Manager
START DCN File

Attachment A

Attachment B

Attachment C

Attachment D

Attachment E